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# ELEVATOR SHAFT
[Aufzugsschacht]

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Specification /1[1]

This invention relates to an elevator shaft that is made up of prefabricated walls.

The idea is to produce the elevator shaft more cheaply and faster than in the past. The elevator shaft that is to be created should be suitable in a vertical direction for apartment houses and warehouses as well as towers. It should be possible to fashion it as an oblique shaft for oblique transport in structures with overhanging portions, also as metallic shaft, for example, for ship elevators, gas boiler systems and also staircase elevators.

Nowadays, the elevator shafts are made with masonry, concrete or prefabricated elements in buildings. In these known shafts, the guide rails must be mounted separately in order to guide the elevator cabs. The same also applies to oblique shafts.

On ships and next to gas boilers, the shafts are made from sheet metal plates or section piece iron. In these shafts, likewise, it is only the use of guider rails that facilitates the guidance of the elevator cab.

Elevators have been made here and there without guide rails. The shafts for this purpose, however, are placed in the condition

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[1]Numbers in the margin indicate pagination in the foreign text.

in which the systems can run only after additional follow-up work.

The invention-based elevator shaft is characterized by the following: The guidance of the elevator cab is facilitated by the shape of the walls without any need for providing separate guide rails and these walls are so fashioned that the form-locking connection of the walls among each other is accomplished by screwing together, welding together or wedging together, and mortar in the gaps represents only an additional means of connection. The walls thus already have the rail parts that serve to guide the elevator cab. By centering devices, one can thus put the wall parts together so that the rail parts will be flush with each other. At least two opposite walls thus take care of the cab guidance function. These walls that are provided with rib-like or groove-like or level tracks can be provided on two opposite ends in the area of the tracks, top and bottom, with center devices and, besides, with at least two connecting elements that preferably represent a screw connection to the next wall. /2

The invention will now be explained in detail with the help of an exemplary embodiment that is illustrated by the enclosed drawings.

Fig. 1 shows an axonometrically illustrated elevator shaft,

Fig. 2 shows a detail of the rib-like emergency guide and the counterweight on a larger scale,

Fig. 3 shows a shaft, for example, of a ship elevator put together from prefabricated sheet metal section pieces.

In Figure 1, side walls 1, front wall 2 are shown with cast-in door 3 and a rear wall 4. Ribs 5 with several guide surfaces are made on side walls 1. The walls are put together with connecting elements 6 that preferably represent a screw connection to the next wall. Side walls 1, used as guide walls, are provided on two opposite ends, top and bottom, with centering devices 7. The rib-like guides 8 are made parallel to the ribs 5 on the side walls; these guides give the counterweight a guide track or an emergency guide. The upper surfaces of the side walls are provided in the area of guide ribs 5 with elevations 9 in order thus to transfer the gaps that are formed by the assembled parts of the elevator shaft or that are formed by the guide ribs into the various planes.

Figure 2 shows a detail of the arrangement of counterweight 10 with the wire guide 11. Even when wire guide 11 is eliminated, the counterweight cannot leave its track because it is guided by the rib-like guides 8.

Figure 3 shows the assimilable side walls of the shaft, /3 labeled 14 and 15. The guide wheels 13 of cab 12 are supported on these walls. The door is labeled 16 and the counterweight is

labeled 10. The guide wheels of the counterweight are not illustrated.

In the build-up of the shaft, one first moves the wall elements, which are provided with centering devices. Here it must be noted that the axis, according to which one lines up the shaft part with the cast-in centering devices during movement and which forms the connecting line between these centering devices, must run precisely parallel to all tracks that are present on this part of the shaft. In the case of the concrete elements, the mentioned requirement must be considered already during the shaping of the boarding. The centering devices must be very precise; they may deviate from the standard dimension only by fractions of a millimeter. Over the centering devices, one puts a gauge and one thus automatically gets the desired interval between the wall parts, which furthermore must also be aligned along the axis of the shaft. When the gauge sits properly, one turns every wall element until it comes to stop against the gauge -- that is the third alignment point of the wall element -- and in that way, one necessarily produces the parallelism of the wall elements or of the tracks and the rectangular layout of the shaft cross-section. The still-remaining elements of a shaft ring that do not bear the centering devices, the door front and the rear wall, are screwed preferably upon the already precisely aligned shaft parts or are connected with them otherwise in a form-

locking manner. In that way, for example, one can close the story-high shaft ring. The individual wall elements can no longer be shifted against each other. One need not wait for the joint agent to harden. The distance gauge can be removed. Using that same gauge, one can immediately thereafter continue the assembly of the next shaft ring. In this way, it is possible to move ten or more story-high shafts in one work day.

The parts of the shaft, for example, the pit or the basement level that for some reason cannot be provided with tracks, are bridged with correspondingly fashioned girders or ribs that are provided with tracks.

The beginning of shaft assembly is made easier of one also has a prefabricated shaft pit or a floor plate provided with centering elements.

After the guide surfaces have already been cast into the /4 wall elements, the elevator assembler need not mount any guides in the shaft and one thus also does not need any otherwise necessary internal scaffold in the shaft. As a result, the elevator -- possibly mounted with the help of the building crane -- can already be operable a few days after completion of the shaft and can be used as building construction work elevator during the interior finishing job.

The work to make the shaft can be done independently of the hardening of the joint material. The parts of the entire shaft

can be placed upon each other in a short time and the shaft can be used without any follow-up work on the guide surfaces immediately subsequently for the guidance of the elevator cab. Such a shaft construction facilitates industrial-scale production and makes for absolute independence of the traveling properties from the craftsmen-based performance capacity of the assembler.

Instead of being made of shaped sheet metal pieces, the walls can also be prefabricated from concrete. The concrete contact surfaces of the walls can be made with the help of a boarding that is worked in a cutting manner. The shaft and the guide surfaces need not extend vertically but can also extend obliquely. When the guide surfaces are made on a prefabricated girder, they can extend not only vertically or obliquely, but they can also form a bend, such as, for example, in the transition from the conical into the vertical or cylindrical shaft of a tower.

## Claims /5

1. Elevator shaft, made from prefabricated walls, characterized in that the guidance of the elevator cab is facilitated by the shape of the walls without having to provide separate guide rails and these walls are so fashioned that the form-locking connection of the walls (1, 2, 4) among each other is accomplished by screwing together, welding together or wedging

and that mortar in the joints represents only an additional connecting agent.

2. Elevator shaft according to Claim 1, characterized in that the elements of the shaft consist of concrete.

3. Elevator shaft according to Claim 1, characterized in that the elements of the shaft consist of sheet metal.

4. Elevator shaft according to Claims 1, 2 and 3, characterized in that the shaft elements that are important in guiding the elevator cab are equipped with centering devices, where the centering devices -- pins, sleeve -- are so tightly tolerated that two superposed elements on the horizontal joint in the area of the guide surfaces will not form any steps.

5. Elevator shaft according to Claims 1, 2, 3 and 4, characterized in that the ribs, serving for the guidance of the elevator cab, are homogeneously and continuously connected by means of several guide surfaces with the wall in order to increase the strength and stability of the element and the guide mutually.

6. Elevator shaft according to Claims 1, 2, 3, 4 and 5, characterized in that the side walls (1) of the shaft in the vicinity of the ribs (5) are provided with guides (8) that resemble the ribs (5), which guides offer an emergency guide for the counterweight that is guided in wires or cables (11).

7. Elevator shaft according to Claims 1, 2, 3, 4, 5 and 6, characterized in that the shaft and the guide surface do not extend vertically but at an incline or obliquely.

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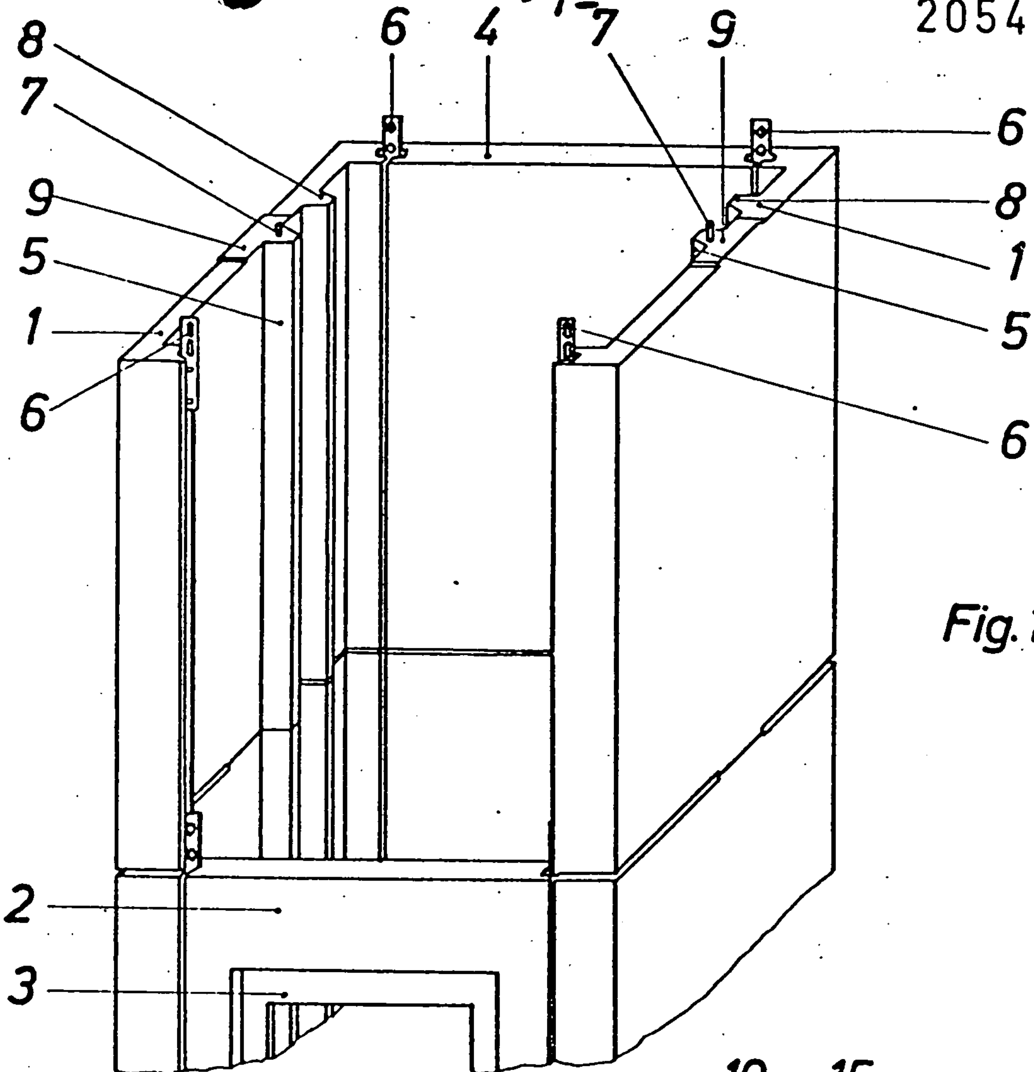


Fig.1

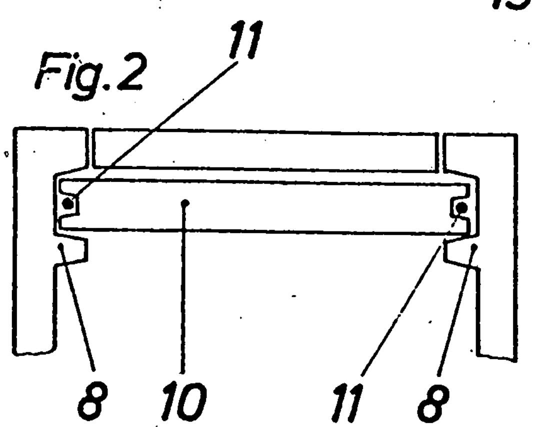


Fig.2

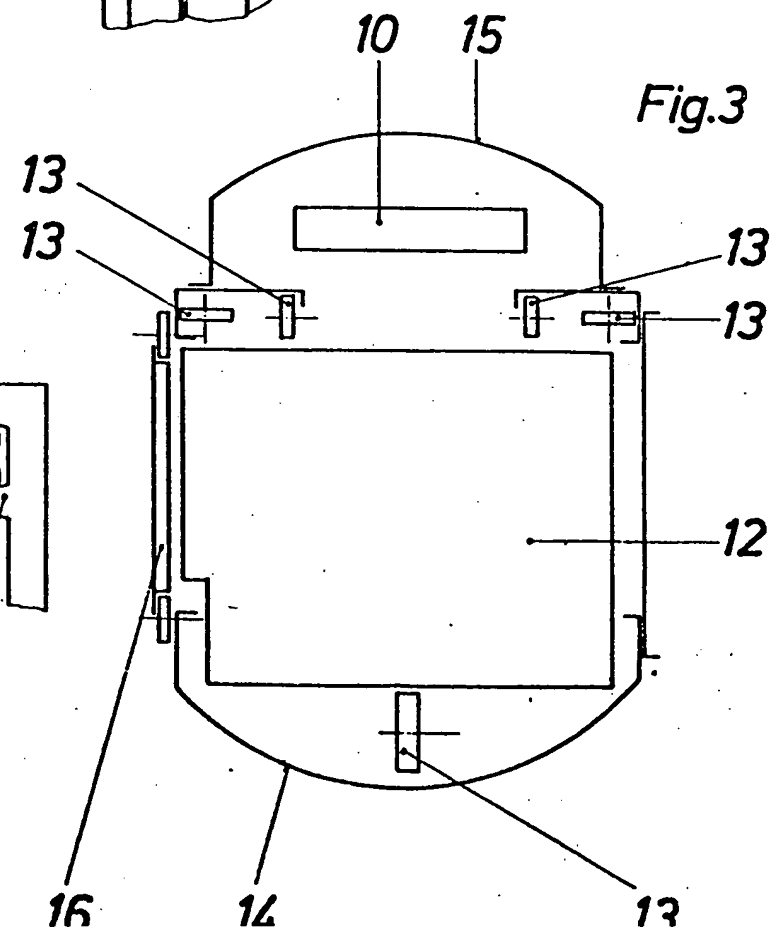


Fig.3